

We Claim:

5        1. A composition comprising an adenoviral vector, wherein said adenoviral vector comprises:

- a) an adenoviral capsid, wherein said adenoviral capsid comprises subgroup B adenoviral capsid fibers selected from the group consisting of Ad11, Ad14, Ad16, Ad21, Ad34, Ad35, and Ad50; and
- 10      b) a nucleic acid molecule, wherein said nucleic acid molecule comprises a retrogen cassette sequence encoding a retrogen protein, wherein said retrogen protein comprises:
  - i) an antigen protein,
  - 15      ii) a leader sequence linked to the N-terminal of said antigen protein, and
  - iii) a cell-binding domain linked to the C-terminal of said antigen protein.

20      2. The composition of Claim 1, wherein said adenoviral capsid fibers are Ad11 fibers.

25      3. The composition of Claim 1, wherein said antigen protein is a tumor associated antigen.

4. The composition of Claim 1, wherein said antigen protein is HBeAg.

5. The composition of Claim 1, further comprising dendritic cells.

20      6. The composition of Claim 1, wherein said composition further comprises a dendritic cell, and wherein said adenoviral vector is inside said dendritic cell.

7. A method comprising;

- a) providing;
  - i) dendritic cells, and
  - ii) a composition comprising an adenoviral vector, wherein said

5 adenoviral vector comprises:

A) an adenoviral capsid, wherein said adenoviral capsid comprises subgroup B adenoviral capsid fibers selected from the group consisting of Ad11, Ad14, Ad16, Ad21, Ad34, Ad35, and Ad50; and

10 B) a nucleic acid molecule, wherein said nucleic acid molecule comprises a retrogen cassette sequence encoding a retrogen protein, wherein said retrogen protein comprises;

- I) an antigen protein,
- II) a leader sequence linked to the N-terminal of

15 said antigen protein, and

III) a cell-binding domain linked to the C-terminal of said antigen protein; and

20 b) contacting said dendritic cells with said composition at a MOI of at least 5 under conditions such that said retrogen protein is expressed by at least 30% of said dendritic cells thereby generating retrogen-expressing dendritic cells, wherein said antigen protein is presented by said retrogen-expressing dendritic cells as a MHC class-I antigen and a MHC class-II antigen.

25 8. The method of Claim 7, wherein said retrogen protein is expressed by at least 35% of said dendritic cells when said contacting is conducted at a MOI of 5-10.

9. The method of Claim 7, wherein said retrogen protein is expressed by at least 70% of said dendritic cells when said contacting is conducted at a MOI of 10-100.

30 10. The composition of Claim 7, wherein said contacting occurs ex vivo.

11. The method of Claim 7, wherein said adenoviral capsid fibers are Ad11 fibers.

12. The method of Claim 7, wherein said antigen protein is a tumor associated antigen.

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13. The method of Claim 7, wherein said antigen protein is HBeAg.

14. The method of Claim 7, further comprising step c) administering said retrogen-expressing dendritic cells to a patient.

10 15. The method of Claim 14, wherein said pateint has HBV-associated hepatocellular carcinoma or HBV infection.

15 16. A method comprising;  
a) providing;  
i) dendritic cells, and  
ii) a composition comprising an adenoviral vector, wherein said adenoviral vector comprises:  
A) an adenoviral capsid, wherein said adenoviral capsid comprises Ad11 capsid fibers; and  
B) a nucleic acid molecule, wherein said nucleic acid molecule comprises a transgene sequence encoding a protein of interest; and  
20 b) contacting said dendritic cells with said composition at a MOI of at least 5 under conditions such that said protein of interest is expressed by at least 55% of said dendritic cells thereby generating protein of interest-expressing dendritic cells.  
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17. The method of Claim 16, wherein the contacting causes said dendritic cells to pass from an immature state to a mature state.

30 18. The method of Claim 16, wherein said protein of interest is expressed by at least 70% of said dendritic cells when said contacting is conducted at a MOI of 10-100.

19. The method of Claim 16, wherein said protein of interest is expressed by at least 90% of said dendritic cells when said contacting is conducted at a MOI of 100-500.

20. The method of Claim 16, wherein said contacting occurs ex vivo.
21. The method of Claim 16, wherein said protein of interest is HBeAg.  
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22. The method of Claim 16, further comprising step c) administering said protein of interest-expressing dendritic cells to a subject.
23. The method of Claim 22, wherein said subject has HBV-associated  
10 hepatocellular carcinoma or HBV infection.